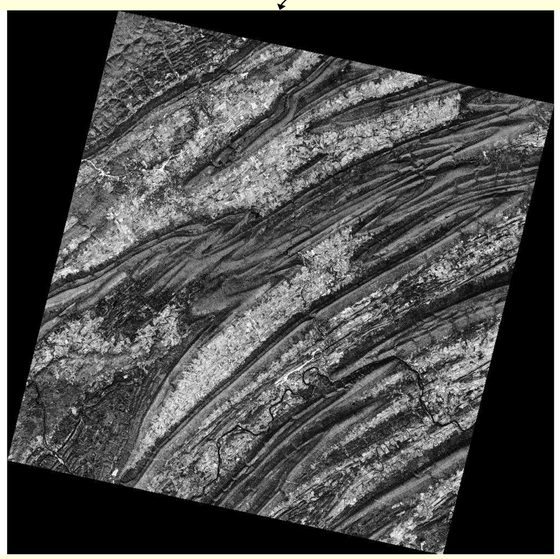
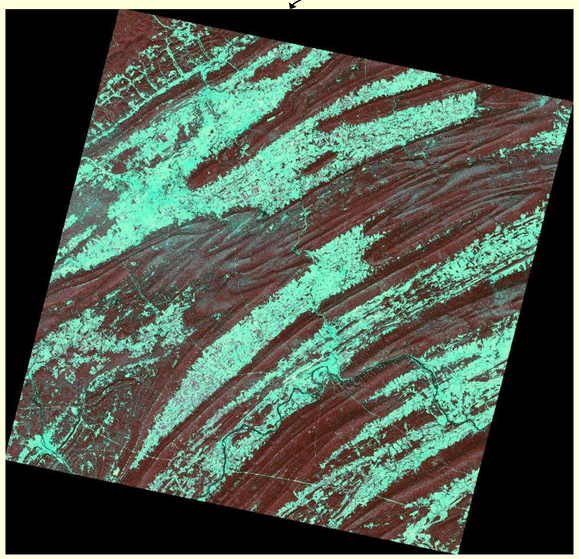
Poly-Pattern Compressive Segmentation of ASTER Data for GIS

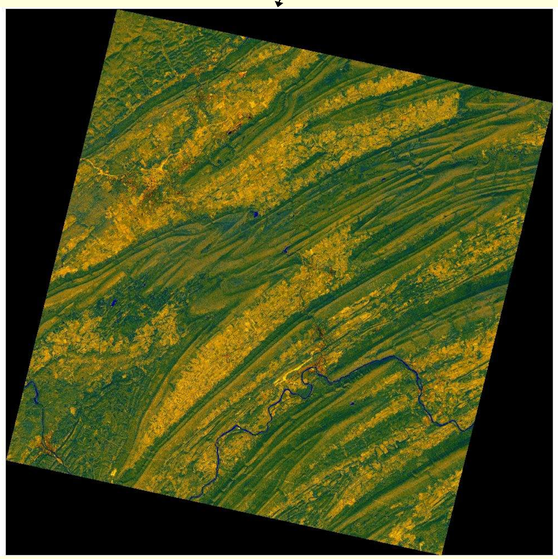
Wayne Myers[1], Eric Warner[1] & Richard Tutwiler[2]

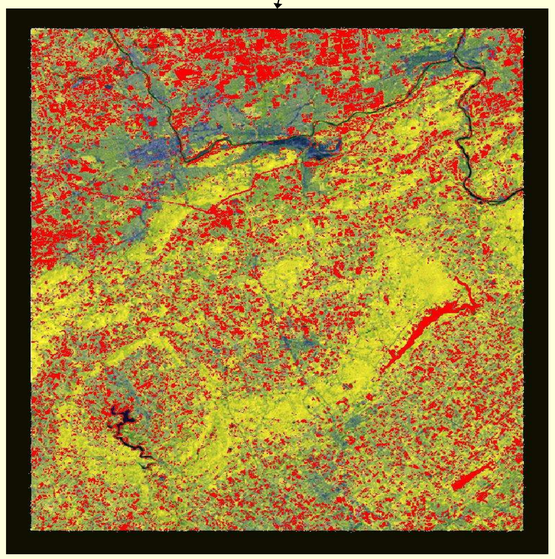
Pattern-based segmentation of multi-band image data, such as ASTER, produces one-byte and two-byte approximate compressions. This is a dual segmentation consisting of nested coarser and finer level pattern mappings called poly-patterns. The coarser A-level version is structured for direct incorporation into geographic information systems in the manner of a raster map. GIS renderings of this A-level approximation are called pattern pictures which have the appearance of color enhanced images. The two-byte version consisting of thousands of B-level segments provides a capability for approximate restoration of the multi-band data in selected areas or entire scenes. Poly-patterns are especially useful for purposes of change detection and landscape analysis at multiple scales. MOSAIC (Mapping Ordered Segments As Image Compression) serves as a mnemonic for this strategy. The primary author has implemented the segmentation methodology in a public domain software suite.

Multi-band image in binary, band-interleaved-by-pixel → **A-Level (single byte) Poly-pattern image made by stacked segmentation** → **Intensity and Index Tables** → **Color Transfer Tables** → **Color Composite Pattern Pictures** → **Mapping Methods (Change Detection)**

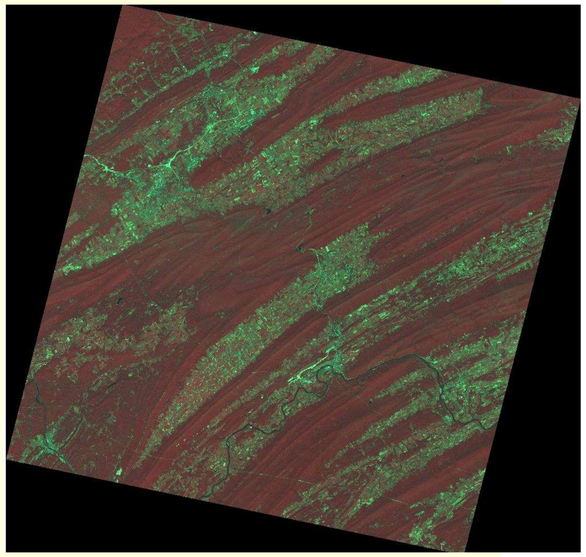


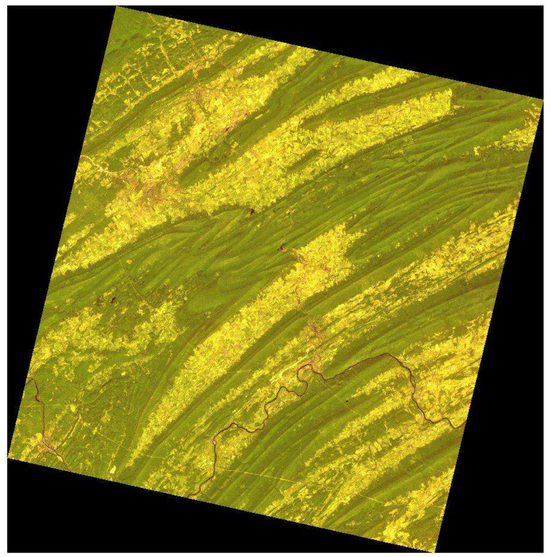






B-Level (two byte) Poly-pattern image made by stacked segmentation





[1]Office for Remote Sensing and Spatial Information Resources
1 Land and Water Bldg.
Penn State University
University Park, PA 16802
(814) 863-0291
wlm@psu.edu
www.orser.psu.edu

[2]Applied Research Laboratory
The Pennsylvania State University
P.O. Box 30
State College, PA 16804-0030
(814) 863-2188
rlt1@psu.edu